

Application Serial No: 10/754,403
Responsive to the Office Action mailed on: April 5, 2007

IN THE CLAIMS

Amendments To The Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1. (Currently Amended) A solid-state imaging device, comprising:
an imaging region in which a plurality of pixels are arranged; and
a signal line through which a pixel signal of the imaging region is read out,
wherein an adding circuit for adding pixel signals obtained from two or more of the pixels is provided so that an output signal of the adding circuit is read out to the signal line, the adding circuit comprising an adding portion, a gain control portion and a storage portion, so that an output of the adding circuit is subjected to a gain control by the gain control portion and then stored in the storage portion, and
wherein on the basis of a predetermined reference quantity of light incident onto the imaging region, a gain of the adding circuit in a condition in which a quantity of the incident light is above the reference quantity is controlled to be smaller than a gain of the adding circuit in a condition in which a quantity of the incident light is below the reference quantity.
2. (Currently Amended) A solid-state imaging device, comprising:
an imaging region in which a plurality of pixels are arranged; and
a signal line through which a signal of the imaging region is read out,
wherein an adding circuit for adding pixel signals obtained from two or more of the pixels is provided so that an output signal of the adding circuit is read out to the signal line, the adding circuit comprising an adding portion, a gain control portion and a storage portion, so that an output of the adding circuit is subjected to a gain control by the gain control portion and then stored in the storage portion, and

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wherein, within at least a partial range of a quantity of incident light onto the imaging region, a gain of the adding circuit is controlled to decrease with an increase of the quantity of the incident light.

3. (Previously Presented) The solid-state imaging device according to claim 1, wherein the adding circuit is arranged between the imaging region and the signal line.
4. (Previously Presented) The solid-state imaging device according to claim 1, wherein a plurality of the adding circuits are arranged between the two or more pixels included in the respective sets of pixels.
5. (Previously Presented) The solid-state imaging device according to claim 1, wherein a plurality of the adding circuits are provided, and gains for at least two of the plurality of adding circuits are controlled individually.
6. (Original) The solid-state imaging device according to claim 3, wherein a photometer portion is provided between the imaging region and the signal line so as to detect a quantity of the incident light onto the imaging region, and a gain of the adding circuit is controlled in accordance with a detection output from the photometer portion.
7. (Original) The solid-state imaging device according to claim 4, wherein a photometer portion is arranged between the two or more pixels included in each of the sets of pixels, so as to detect an quantity of incident light onto the two or more pixels, and wherein a gain of the adding circuit is controlled in accordance with a detection output from the photometer portion.
8. (Previously Presented) The solid-state imaging device according to claim 1, wherein the adding circuit is provided with an averaging portion for averaging pixel signals obtained from two or more of the pixels, and when the quantity of incident light is larger than a predetermined higher reference quantity that is larger than the reference

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quantity, an output of the averaging portion is read out to the signal line in place of the added signal.

9. (Previously Presented) The solid-state imaging device according to claim 1, wherein when signals of N pieces of pixels are added, a gain of the adding circuit is controlled so that an output value from the adding circuit is not more than a value obtained from the following formula:

$$(\text{value obtained by adding the N pieces of signals}) / N.$$

10. (Previously Presented) The solid-state imaging device according to claim 1, wherein when signals of N pieces of pixels are added, a gain of the adding circuit is controlled so that an output value from the adding circuit is less than a value obtained by adding the N pieces of signals and more than a value obtained from the following formula:

$$(\text{value obtained by adding the N pieces of signals}) / N.$$

11. (Previously Presented) A camera equipped with the solid-state imaging device according to claim 1.

12. (Previously Presented) The solid-state imaging device according to claim 2, wherein the adding circuit is arranged between the imaging region and the signal line.

13. (Previously Presented) The solid-state imaging device according to claim 2, wherein a plurality of the adding circuits are arranged between the two or more pixels included in the respective sets of pixels.

14. (Previously Presented) The solid-state imaging device according to claim 2, wherein a plurality of the adding circuits are provided, and gains for at least two of the plurality of adding circuits are controlled individually.

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15. (Previously Presented) The solid-state imaging device according to claim 2, wherein the adding circuit is provided with an averaging portion for averaging pixel signals obtained from two or more of the pixels, and when the quantity of incident light is larger than a predetermined higher reference quantity that is larger than the reference quantity, an output of the averaging portion is read out to the signal line in place of the added signal.

16. (Previously Presented) The solid-state imaging device according to claim 2, wherein when signals of N pieces of pixels are added, a gain of the adding circuit is controlled so that an output value from the adding circuit is not more than a value obtained from the following formula:

(value obtained by adding the N pieces of signals) / N.

17. (Previously Presented) The solid-state imaging device according to claim 2, wherein when signals of N pieces of pixels are added, a gain of the adding circuit is controlled so that an output value from the adding circuit is less than a value obtained by adding the N pieces of signals and more than a value obtained from the following formula:

(value obtained by adding the N pieces of signals) / N.

18. (Previously Presented) A camera equipped with the solid-state imaging device according to claim 2.

19. (New) The solid-state imaging device according to claim 1, wherein a gain is controlled for each of the plurality of signals.

20. (New) The solid-state imaging device according to claim 2, wherein a gain is controlled for each of the plurality of pixels.